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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,846	02/06/2001	Sung-nam Lee	030681-280	6862

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EXAMINER

CRANE, SARA W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/776,846	Applicant(s) LEE ET AL.	
	Examiner Sara W. Crane	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-7, 9-11, and 17-19, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 17, the antecedent for "the carrier barrier layer" is not clear. Examiner assumes this is the "carrier blocking layer" of claim 12, line 7. In the other claims listed above, "the thickness of . . . each double layer" is different from "the thicknesses "of the other double layers." What other double layers? The antecedent for "the other double layers" is not clear. Or perhaps there is a grammatical error, but, at any rate, "each" layer would include all of the layers, and a layer thickness cannot be different from itself.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 12-14 and 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Hatakoshi et al.

Each layer recited in these claims appears in figure 1 of the reference. Substrate is 10, active layer is "MQW," n-type clad is 13, carrier blocking layer is 15, and electrodes are 22 and 23. Waveguide is 15, and 12 is an n-type compound layer formed between the clad and the substrate, and connected to electrode 23. The materials are nitrides. The substrate is sapphire.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatakoshi et al.

It would have been obvious to optimize the layer thicknesses to accomplish the desired functions of cladding and waveguide layers.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harakoshi et al. in view of Shimizu et al.

Art Unit: 2811

Shimizu teaches advantages of a multi-quantum barrier layer for carrier blocking.

See for example column 1, lines 16-19.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 17, and further in view of Nagahama et al.

Column 22, lines 46-47, and column 23, lines 12-13, of Nagahama et al. teaches waveguide and contact layer both of GaN, having different dopant concentrations. It would have been obvious to provide such layers in the Hatakoshi device, in order to optimize these two layers for their separate functions.

~~Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagahama et al.~~

Column 11, lines 25-30, of Nagahama et al. teaches an active layer 4 of InGa_N, and multi-quantum cladding layers which may be AlGa_N/Ga_N, AlGa_N/AlGa_N, or AlGa_N/InGa_N (column 11, lines 50-67). No structural distinction has been shown to arise from the function of "barrier layers," such that these claims would describe structure that is distinct from that shown in the reference. Alternatively, a cladding layer acts as a barrier, for carrier diffusion, for light reflection, and for impurity diffusion, so the recited function would be met by the Nagahama layers.

Allowable Subject Matter

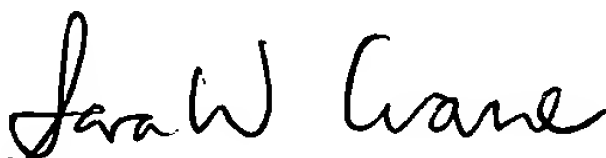
Claims 5-7, 9-11, and 18-19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Double layer stacks, with the layers having different thicknesses as recited, and having the relationships recited in the claims with respect to other layers, are not taught in the prior art of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (703) 308-4894.

The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist, whose telephone number is (703) 308-0956.


Sara W. Crane
Primary Examiner
Art Unit 2811